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ABSTRACT

A study explored the question of how bilingualism and biliteracy affect metacognition. The strategic reading processes of eight bilingual Latina/o grade six and seven students who were identified as proficient English readers were examined. For comparative purposes, smaller samples of monolingual Anglo students who were proficient English readers and bilingual Latina/o students who were less proficient English readers (three each) were also included. Data were gathered using both unprompted and prompted think-alouds, interviews, a prior-knowledge measure, and passage recalls. Preliminary analysis resulted in the identification of 22 different strategies that were categorized into three groups (text-initiated, reader-initiated, and reader- and text-initiated). Three of the strategies were considered unique to the proficient Latina/o readers. The proficient Latina/o readers actively transferred information across languages, translated, and openly accessed cognate vocabulary. The less-proficient Latina/o readers used fewer strategies and were often less effective in resolving comprehension difficulties. Findings suggest that Latina/o students who are proficient English readers possess a qualitatively unique fund of strategic reading knowledge. (Contains 88 references and five tables of data. An unprompted English narrative passage, a language self-report matrix, text analyses of two passages, the student interview protocol, definitions and examples of reading strategies used by bilingual readers, responses of proficient readers, and two appendixes of data are attached.) (Author/RS)

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THE METACOGNITIVE STRATEGIES OF LATINA/O STUDENTS WHO READ SPANISH AND ENGLISH

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Center for the Study of Reading

TECHNICAL REPORTS

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Abstract

A study examined the strategic reading processes of 8 bilingual Latina/o children who were identified as proficient English readers. For comparative purposes, smaller samples of monolingual Anglo students who were proficient English readers and bilingual Latina/o students who were less-proficient English readers (3 each) were also included. The major objective of the study was to explore the question of how bilingualism and biliteracy affect metacognition. Data were gathered using both unprompted and prompted think-alouds, interviews, a prior-knowledge measure, and passage recalls. Preliminary analysis resulted in the identification of 22 different strategies that were categorized into 3 groups (text-initiated, reader-initiated, and reader- and text-initiated). Three of the strategies were considered unique to the proficient Latina/o readers. The proficient Latina/o readers actively transferred information across languages, translated, and openly accessed cognate vocabulary. The less-proficient Latina/o readers used fewer strategies and were often less effective in resolving comprehension difficulties. The data suggest that Latina/o students who are proficient English readers possess a qualitatively unique fund of strategic reading knowledge.

THE METACOGNITIVE STRATEGIES OF LATINA/O STUDENTS WHO READ SPANISH AND ENGLISH

Very little research in literacy focuses on communities that are not white, middle class, or native speakers of English. As a result, researchers and practitioners cannot avail themselves of necessary information on the values, beliefs, and knowledge of literacy held by groups labeled by the majority culture as "minorities." Such a lack of information is especially egregious with respect to the Latina/o community, with the pernicious result that academic achievement discrepancies between Latina/o and Anglo students receive an inordinate amount of public and research attention (García, Pearson, & Jiménez, 1994; Pallas, Natriello, & McDill, 1989).

For example, some researchers have examined background factors such as socioeconomic status, language background, and ethnicity in an attempt to account for differences in achievement levels (Ortiz, 1986; So & Chan, 1984; Steinberg, Blinde, & Chan, 1984). Describing the backgrounds of these children, however, without simultaneously identifying and understanding their reading capabilities sheds insufficient light on the issue. Mounting evidence suggests that Latina/o children who have experienced two cultures and two languages differ in the kinds of knowledge they draw from and the strategies they use when confronted with printed text (Delgado-Gaitan, 1990; García, 1991; Langer, Bartolomé, Vásquez, & Lucas, 1990).

Investigating the reading knowledge and strategic processes of bilingual Latina/o students could help improve reading instruction and, at the same time, inform the construction of a second-language model of proficient reading. This is especially true for research focused on the enabling rather than the disabling attributes of non-mainstream populations. Unfortunately, except for a few isolated examples (García, 1988; Padrón, Knight, & Waxman, 1986), very little research in reading has utilized this approach with students from culturally and linguistically diverse backgrounds. Most of the research on second-language literacy has confined itself to examination of adults or high school students (Block, 1986; Casanave, 1988; Hosenfeld, 1978; Koda, 1988).

Second-Language Reading Research

Research in second-language reading has dealt primarily with the effects that first-language literacy and second-language oral proficiency exert on second-language literacy. For example, Cziko (1980) looked at the oral reading of students learning French as a second language in Canada and showed that French language proficiency was inversely related to reliance on bottom-up reading strategies. Conversely, the more proficient students were in French, the more likely they were to approximate the errors of native-French speakers.

Clarke (1988) examined the effect of first-language literacy on second-language literacy. He used cloze tests to compare the performance of adult good and poor native Spanish readers, who were all low-level, English-as-a-second-language learners. The good Spanish readers provided semantically acceptable answers 41% of the time whereas the poor readers did so at the rate of only 25% on a Spanish-language cloze test. When reading English, however, the gap between good and poor Spanish readers decreased to just 4 percentage points, 22% to 18%. Clarke's findings provide limited evidence for the occurrence of transfer of literacy abilities from Spanish to English. Limited oral English proficiency seems to have played a major role in depressing the cloze test scores of Clarke's subjects.

Clarke also explored the oral reading of a good native-Spanish reader and a poor native-Spanish reader. Using oral miscue analysis, he found that 80% of the miscues in Spanish of the good Spanish reader were semantically acceptable, while only 64% of the miscues of the poor reader qualified as such. In English, the good Spanish reader produced a 46% semantically acceptable miscue rate as compared to a 38% miscue rate for the poor Spanish reader. Once again, first-language reading ability appears to

have transferred and had an effect on second-language literacy, but not nearly to the same degree as second-language proficiency.

Other studies have shown that second-language children differ from native-English speaking children in the lower amounts of background knowledge they bring to texts used in reading tests (García, 1988), in the type of background knowledge they rely on (Ammon, 1987; García, 1988), in their interpretation and knowledge of English vocabulary (García, 1988), and in their comprehension of English syntax (McLaughlin, 1987). Even bilingual adults, with high levels of proficiency in both their languages, have been shown to process text more slowly in both of their languages than comparable monolinguals (Favreau & Segalowitz, 1982; Mack, 1984).

Successful bilingual readers develop strategies, knowledge, and abilities specifically tailored to the language they are learning. For example, French-immersion students in Canada began to differentiate between English and French by the end of grade 2 (Kendall, Lajeunesse, Chmilar, Shapson, & Shapson, 1987). These students also attained high levels of English reading proficiency without an English reading instructional program, signalling that reading ability transferred from their weaker to their stronger language. Verhoeven (1990) also found that Turkish children living in Holland developed language-specific strategies for distinguishing between texts printed in Turkish and Dutch. Using data from the eye movements of native and experienced German readers, Bernhardt (1984) found that both groups differed from less-experienced German readers in the length of time spent on articles and prepositions. The more proficient the reader, the longer the eye fixations on these parts of speech. These differences indicate that language-specific strategies may be involved as these words are important determiners in German of case and gender, and consequently affect reading comprehension.

Several factors, then, appear to affect the reading comprehension of second-language learners: the degree of first-language literacy proficiency, the degree of second-language oral proficiency, and literacy skills developed specifically in the second language. Also, prior-knowledge differences between native-English speakers and non-native speakers have been shown to affect the reading performance of second-language learners (Hudson, 1982; Johnson, 1981; Steffensen, Joag-dev, Anderson, 1979).

Achieving Bilingual Proficiency

Native-like proficiency in second-language reading can be very difficult to achieve (Weber, 1991). Early reports from Canada's celebrated immersion programs provided evidence that although the middle-class Anglophone children learning French could read in that language at high levels (as measured by standardized tests of reading), they nevertheless were not as proficient as native French-speaking children (Lambert & Tucker, 1972). Mägiste (1979) found that middle-class German high school students living in Sweden needed at least 6 years before they could demonstrate productive language competence in Swedish at the same level as they were able to in German. They also needed from 4 to 5 years before they could comprehend with equal facility in their two languages.

Collier (1987) examined the schooling experiences of "advantaged" bilingual children (students who tended to come from families with low-income levels but whose parents were from middle-to upper-class backgrounds in their country of origin and who were upwardly mobile) from 75 different language backgrounds. Her goal was to discover the length of time these children needed to achieve academic parity with native English-speaking children on standardized tests of academic achievement.

Collier found that the amount of time needed to approach grade-level performance varied, depending on such factors as age on arrival in the U.S. and length of time in American schools. For example, children who were 8-11 years of age on arrival in the U.S. attained grade-level scores in the shortest duration, from 2 to 5 years of schooling. Children 5 to 7 years of age did not attain grade level in all academic areas during the 4 years of the study. Scores were especially depressed in reading for the 5-

year-olds. Based upon their progress over 4 years, Collier projected that the 12 to 15-year-olds would require from 6 to 8 years to achieve grade-level performance.

Saville-Troike (1984) conducted a year-long study of 19 grade 2 through grade 6 students who spoke 7 different languages and who had little or no prior exposure to English. All of the students she observed were already literate in their native language and came from well-educated families. The students spent the majority of their day in an all-English classroom environment. Most of them also were involved in at least 30 minutes a day of native-language instruction, and all of them were taught English as a second language by a specialist. Saville-Troike found that with only two exceptions, children who were highly proficient readers in their native language also did well in English reading.

Children from minority communities often experience great difficulty in second-language literacy learning (Cummins, 1986). Espinosa and Ochoa (1986), for example, document that minority children in general, and language-minority children in particular, experience academic stress as early as grade 3. They found a negative correlation for ethnic group with reading achievement for Native-American, African American, and Hispanic students at grades 3, 6, and 12.

García et al. (1994) contend that the current Eurocentric educational situation in which language-minority children find themselves virtually guarantees that they will be denied access to the metacognitive secrets of the reading process. Many instructional practices ignore the strengths and experiences of children of color. This is reflected and exacerbated by the paucity of materials that deal with situations and events familiar to children from nonmainstream backgrounds (Au, 1993; Harris, 1992). García et al. propose that without the opportunity to read both culturally familiar and unfamiliar text, children find it difficult to develop crucial comprehension strategies for integrating prior knowledge with information found in print.

A growing body of research suggests that access to students' first-language can enhance their reading comprehension (Goldman, Reyes, & Varnhagen, 1984; Lee, 1986a, 1986b; Moll, 1988; Moll, Estrada, Díaz, & Lopes, 1980). Of concern, however, is the fact that such use is frequently discouraged in American schools (see Cummins, 1986; Fillmore, 1982). Limited understanding of second-language acquisition and ethnocentric biases seem to motivate such behavior (Nieto, 1992).

Lee (1986b) demonstrated that university-student subjects were able to demonstrate more complete understanding of Spanish language texts by writing in English than were comparable subjects writing in Spanish. Goldman et al. (1984) found similar effects for native-Spanish-speaking children reading fables. When their subjects used Spanish for a retelling task, they could recall fables read in their second language (English) as well as when they read them in their first language (Spanish).

Moll and his colleagues (Moll, 1988; Moll et al., 1980) also report that use of one's primary or stronger language can enhance reading comprehension. They organized a learning situation so that Mexican-American students learning English could discuss their English reading in Spanish. The students were capable of discussing much more sophisticated English text, and they also demonstrated the ability to comprehend at a higher level. Once again, in a situation quite different from that reported by Lee (1986a; 1986b), access to first-language competencies enhanced students' abilities to demonstrate their knowledge and capabilities. Here too, the social situation was defined for the students so that use of the first language was not only allowed but also encouraged. Children may require carefully designed social contexts to become aware of the facilitating effects of their first-language knowledge. Such awareness, of course, is metacognitive in nature and may or may not develop in the absence of a supportive context.

In summary, a lengthy period of time is necessary to attain high levels of reading proficiency in a second language. Some evidence suggests that reading abilities transfer across bilinguals' different languages. Although it is difficult for bilinguals to attain native-like proficiency in second-language reading, high

levels of reading expertise are possible. Finally, a strong case can be made for the inclusion of a student's first language in reading programs. Reading achievement can be promoted and the student's cognitive development may be enhanced by its inclusion.

Research Focused on the Metacognitive Knowledge of Second-Language Learners

The study of metacognition or what readers know about themselves, about the task of reading and about various reading strategies, has proven to be a fruitful area of investigation. For example, we now know that older and more successful readers know more about themselves as learners, that they approach different genres in distinct ways, and that they use more reading strategies (Baker & Brown, 1984; Garner, 1987).

Theorists speculate that bilingualism may enhance children's capacity for conscious introspection. For example, Hosenfeld (1978) suggests that second-language learning is a unique process and may bring about greater awareness of cognitive activity. Vygotsky (1962), viewed learning a foreign language as "conscious and deliberate from the start" (p. 109). He raised the possibility that cognitive differences may exist between bilingual and monolingual children in their awareness of language and its functions.

Several researchers report advantages in metalinguistic awareness for orally proficient bilingual children (Feldman & Shen, 1971; Ianco-Worrall, 1972; Lambert & Tucker, 1972; Landry, 1974; Peal & Lambert, 1962). Their work builds on Vygotsky's (1962) theory of the relationship of thought to language. Proficient bilingual children tend to be less rigid in their use of language than monolingual children. For example, bilingual children more readily accept the idea that a dog could be called a cow, and yet not give milk.

O'Malley and his colleagues (O'Malley, Chamot, Stewner-Manzanares, Kupper, & Russo, 1985) speculate that a set of general learning strategies, available to monolinguals, bilinguals, and multilinguals alike may be of particular use in developing second-language skills. These researchers concluded that secondary students learning English engaged in considerable reflection on the acquisition and function of language.

Miramontes and Commins (1989) suggest that metacognition may play an important role in the effective transfer of strategies developed in one language to a second. Rubin (1975) theorized that good language learners attend to form in language, and that they actively search for patterns as they analyze, categorize, synthesize and establish schemes for classifying. Rubin also proposed that good language learners use print as a guide for monitoring language use.

Some research evidence suggests that what second-language readers know about reading affects their reading behavior. Carrell (1989) found that in a group of foreign and American university students, the better readers, both native-Spanish and English speakers, adjusted their reading strategies depending on the language of the text and their own perceived proficiency in that language.

The use of strategic reading processes has been identified as a critical component in the successful reading of Latina/o children. Langer and associates (Langer et al., 1990) claim that use of good "meaning-making strategies" enhanced the English and Spanish reading of children of Mexican origin more than did their language proficiency. Langer et al. also claim that these students used knowledge of Spanish as support when they encountered difficulty reading English. The researchers showed that children who were good readers of either Spanish or English also tended to be good readers of their other language.

Research Perspective and Framework

This research is grounded in the premise that the Latina/o community itself is capable of supplying valuable information concerning literacy beliefs and practices. Instead of regarding Latina/o culture as problematic or at odds with the efforts of school personnel, it is our contention that much can be learned by carefully eliciting and examining the literacy knowledge and practices of Latina/o students identified as proficient English readers.

In essence, the framework adopted for this research rejects notions of cultural and linguistic deficits and embraces more carefully constructed, and hopefully, more accurate depictions of communities that are far too often excluded from educational opportunity. Such an approach is in accord with methods recommended by Freire (1973; Freire & Macedo, 1987), and other researchers and activists interested in fostering change in the unacceptably low levels of academic achievement attained by many Latina/o students (Delgado-Gaitan, 1990; Heath, 1991; Moll, 1990; Nieto, 1992). Wolcott (1992) labels research in this tradition as problem-focused; "The avowed purpose of [problem-focused] research is to bring about change directed at improvement" (p. 15).

Theoretical support for research grounded in a particular community's literacy perspective and practices, can be found most prominently in the writings of researchers working within an anthropological framework. Heath (1991) for example, argues that by adopting this perspective we may, in fact, actually discover practices that not only promote improved learning for students from minority communities but also enhance the literacy acquisition of students from the dominant culture.

This research focuses on the metacognitive knowledge and strategies of bilingual Latina/o children in the upper elementary grades who are successful English readers. The present study is an attempt to contribute to the current knowledge base regarding reading instruction for children learning English as a second language by exploring the question of how bilingualism and biliteracy affect metacognition. The study was designed to maximize the potential insights that we could gather about this phenomenon. It was not intended to provide any sort of normative account of the incidence of metacognitive behaviors among bilingual children across languages or textual experiences. The following questions provide a more precise statement of the research problem: (a) What do proficient Latina/o readers know about reading? (b) What strategies do proficient Latina/o readers use while reading? (c) Do proficient Latina/o readers use the same strategies in both languages? (d) Do metacognitive strategies exist that facilitate transfer of strategy knowledge? (e) To what extent do the cognitive and metacognitive strategies of proficient Latina/o readers differ from those of proficient Anglo readers? and (f) To what extent do the cognitive and metacognitive strategies of proficient Latina/o readers differ from those of less-proficient Latina/o readers?

Method

Participants

Fourteen grade 6 and 7 students from 3 schools in 2 school districts participated. There were 8 Latina/o students who were proficient English readers, 3 Latina/o students who were marginally proficient English readers, and 3 monolingual Anglo students who were proficient English readers. School District #1 is of medium size (5,824 students), and District #2 is smaller (1,237 students). Approximately 28% of the student body in each of the District #1 schools was Latina/o, whereas 13% were Latina/o in the District #2 school. Table 1 contains a summary of student background characteristics. Participating students are rēferred to by pseudonyms.

Selection of student participants was based on 4 criteria: students' ranking as proficient and less-proficient English readers, their ability to think aloud while simultaneously reading silently, and the

Latina/o students capability and willingness to read in Spanish. Goetz and LeCompte (1984) advocate criterion-based participant selection for qualitative research projects. Student selection and ranking was primarily based on teacher, principal, and bilingual program director's judgment. These people were asked to indicate which students were succeeding and not succeeding in the school program. The teachers' categorization of students as proficient and less-proficient English readers was corroborated by examining their reading comprehension performance on a standardized reading test. Test scores (Science Research Associates) were available for 5 of the 6 grade 6 proficient Latina/o readers (M = 70.4), and for the 2 grade 7 proficient Latina/o readers (California Test of Basic Skills, M = 85.5)[1]. For the 3 less-proficient Latina/o readers, standardized reading scores in English were also available (SRA test, M = 53.3), and for the 3 proficient monolingual readers (SRA, M = 87.3).

[Insert Table 1 about here.]

No test scores were available for the students' Spanish reading abilities. Spanish reading ability initially was judged on the basis of student self-reporting and corroborated prior to data collection by asking the students to read orally and discuss a Spanish-language text (see Appendix B for language self-report matrix). Some students recommended by their teachers for inclusion in the study could not be included because of an inability or unwillingness to read in Spanish.

Measures

Unprompted think-alouds. Three Spanish texts and two English texts were used for unprompted think-alouds (no prearranged prompts were written for these materials). These texts were complete and naturally occurring. They were selected because they were short (171 to 503 words), interesting, and, based on pilot testing, created opportunities for invoking cognitive and metacognitive strategies (see Appendix A for sample text, "The King of the Beasts"). Pilot testing revealed that unless text passages were provocative, little verbalization could be elicited.

The Spanish texts included two short humorous narrative passages and one expository passage. Because the Spanish narrative texts were short, two were used instead of one to assure that sufficient opportunities for student participant verbalization were present. The narrative texts were taken from an anthology of readings, *Cuentos y Más Cuentos*, compiled by John Pittaro (1964). The Spanish expository passage was taken from the grade 6 science book, *Enfasis en la Ciencia* (Sund, Adams, Hackett, & Moyer, 1985).

The English narrative text was taken from the book, *Mad Scientists* (Asimov, Greenburg, & Waugh, 1982). The English expository passage was found in the *Children's Britannica* (1988).

Prompted think-alouds. Materials for the two prompted think-alouds consisted of two different expository passages, one in English and one in Spanish. The Spanish passage was found in *Enfasis en la Ciencia* (Sund et al., 1985). The English text was taken from the *World Book Encyclopedia* (1988). Neither text was particularly well structured; both followed a "listing" of information format common in much expository writing (Armbruster, 1988).

Questions and prompts in the prompted think-alouds were aimed at eliciting students' introspective knowledge of metacognitive strategies for dealing with informational text. Approximately 17 different places in each of the prompted texts were marked with an asterisk. Asterisk placement was based on a qualitative analysis of where the children were most likely to engage in strategic processing while reading. This analysis followed procedures recommended by Roeber, Kirby, Dutcher, and Smith (1987)

[1] All test scores are reported in percentiles.

(see Appendix C for examples of mapped passages). In addition, based on second-language research (García, 1991; Saville-Troike, 1984), several vocabulary items were chosen for asterisk placement. The following excerpt provides an example of the sort of prompts and questions used:

> Octopus is a marine animal with a soft body and eight arms, also called tentacles.*(*What do you think about this?*) The word octopus *(*What do you think?*) comes from two Greek words that mean eight feet.*(*How did you decide what is important to remember in this sentence? Do you have any questions that you would like to find answered in the article?*)

Prior-knowledge assessment. For each of the 7 passages, an accompanying prior-knowledge task was developed based on techniques developed by the Illinois State Board of Education (Pearson & Greer, 1992; Pearson & Valencia, 1986). These tasks included an introductory statement briefly describing the topic of the text and its genre. The types of information elicited differed according to the text genre: expository or narrative. For example, the measures developed for each of the expository passages asked students to write up to 10 different things about the topic. Four or five key vocabulary terms chosen from each of the texts also were included for definition using procedures described by Nagy (1988). For example, the words, *sobretodo* (overcoat) and *casa de empeños* (pawn shop) were chosen because of their centrality for comprehending the Spanish narrative text, and because little contextual support was available for determining their meaning.

The narrative prior-knowledge measures included some information about each passage's main character and that person's role in the story. Information about where a story of this type could be found was also added, that is, in a collection of science fiction stories. Students were asked to predict as much as possible about what might happen. The participants were provided with the following instructions:

> You are going to read a short story about a scientist who works with different kinds of animals. This is a science fiction story that you would probably find in a book about science fiction. Before you read the story, please write up to 10 things that you think the scientist might do.

Text retellings. All of the texts, narrative and expository, were analyzed following procedures described by Roeber, Kirby, Dutcher, and Smith (1987) to determine their constitutent parts. These analyses were used to rate the coherence and completeness of the passage retellings dictated by the student participants. The narrative texts were outlined using a story mapping to identify the major themes, the plot, the setting, and to determine the traits and functions of major characters. Also, a list of significant events in each story was drawn up. The expository texts were diagrammed hierarchically so that central ideas were placed highest, followed by important ideas, and, finally, supporting details.

Interview protocol. The interview protocol consisted of 11 questions (see Appendix D for the complete student interview protocol). The first 4 questions were adapted from McNeil (1987). These questions dealt with very general aspects of reading. The remaining 7 questions were developed on the basis of what prior research had indicated might influence the English reading of bilingual students (Carrell, 1989; Miramontes & Commins, 1989; Padrón et al., 1986; Pritchard, 1990; Rubin, 1975). They were also formulated and revised on the basis of pilot testing with adult bilinguals and children (see next section). The monolingual Anglo students were only asked the first 4 questions.

Pilot Testing

There were two distinct phases to the pilot testing. Phase 1 focused on adults who were proficient bilingual readers, Phase 2 focused on bilingual children.

Phase 1: Adults. Two adults participated in Phase 1 of the research. One was a Latino graduate student in education, the other was an Anglo undergraduate student in accounting. Both participants had extensive experience using their second language. The Latino graduate student had been in the United States for approximately 20 years and had been a student for the last 2 years. The undergraduate student studied Spanish for 2 years and lived in Mexico for 2 years. His parents were also fluent second-language speakers of Spanish. Both participants rated their native-language and second-language reading and writing abilities highly.

Adults were chosen for Phase 1 of the pilot study because it was not possible to determine from the literature what effects bilingualism exerts on reading strategy use and metacognition. The adult participants also provided a rich and large body of verbal data. In particular, they possessed a large amount of information, both declarative and procedural, for understanding the relationship between their two languages.

Initial work with the 2 adult participants indicated that it was necessary to explicitly direct them to read the passages silently. Also, the interview protocol was modified so that questions that elicited redundant data were eliminated. Nineteen questions were asked of the adults, while only 11 were directed to the children. In addition, it was originally proposed that a paper-and-pencil task might provide useful information regarding metacognitive knowledge and strategies. This did not prove to be the case.

Phase 2: Children. In Phase 2 of the research, a rural school district was contacted and arrangements were made to work with 5 students who met the criteria of being Latina/o, bilingual, and proficient English readers. Several texts more suitable for students in grades 6 and 7 were selected. A background questionnaire was also prepared.

This phase of the pilot testing provided much valuable information. The students made it clear that they would provide little verbal data for materials they considered "boring" or too lengthy. It was also apparent that without adequate preparation for the task of thinking aloud, students did not produce satisfactory protocols. Carefully designed preparation was necessary to elicit rich verbal protocols from Latina/o students in grades 6 and 7.

This provoked a search for different texts that met the criteria of being of high interest to students in grades 6 and 7, were brief, and yet were still naturally occurring or authentic. These texts needed to be written or structured in such a way so as to provide ample opportunities to invoke cognitive and metacognitive strategies. Also, training sessions, described in the following sections, were developed as a result of the pilot testing.

Procedures

Group sessions. There were 2 stages to the data collection. The first stage consisted of two group meetings in each school (3 schools) where all of the Latina/o student participants met with the primary investigator. During these group meetings, which were conducted entirely in Spanish, students heard the purpose of the project, filled out background questionnaires, and completed measures of prior knowledge. In the second group meeting, students saw two videotapes. The first featured a Spanish monolingual child, and the second, an English monolingual child engaged in thinking aloud while reading. After discussing the videotapes, the students practiced thinking aloud with a partner. Students were encouraged several times to think about what they did while reading and to reflect on how bilingualism affected their reading. The Anglo students met separately as a group and followed the same procedure used with the Latina/o students, except that the sessions were conducted in English. These sessions were approximately 50 to 60 minutes in length.

Think-alouds were chosen because, when successfully used they provide a means for viewing otherwise invisible cognitive processes (Ericsson & Simon, 1984). Students were given prior exposure to the think-aloud procedure because other researchers reported that it can be difficult for intermediate students to verbalize their thoughts while reading silently (Langer et al., 1990). To offset this problem, several researchers recommend that students be given practice in the think-aloud procedure prior to using it for data collection (Garner, 1987; Hartman, in press; Olson, Duffy, & Mack, 1984). Ericsson and Simon (1980, 1984) report that cognitive processes are not substantially altered by the think-aloud procedure.

Individual student sessions. The second stage of data collection consisted of 3 individual student sessions with each of the Latina/o students. Students read the Spanish and English texts and thought aloud following procedures they had seen in the videotapes. They were encouraged to describe all of their thinking as they silently read the texts. They were prompted during the think-alouds by the following: "What are you thinking about?" and "Tell me as much as you can about what you are thinking." After they read each text, they were asked to retell it. The Anglo students also followed this procedure, except that they only read the English texts. These sessions were also between 50 and 60 minutes in length. They were tape recorded for later analysis.

Although it was originally planned to interview each student after the completion of all the think-alouds, this was not always possible because of scheduling difficulties. For 2 students, this resulted in their being interviewed before their last think-aloud. During the interview, the bilingual students were encouraged to use whatever language felt most comfortable to them. The Anglo students were, of course, interviewed in English. The data collection procedures resulted in approximately 220 minutes of data per Latina/o student and 120 minutes per Anglo student of interview, recall, and think-aloud data.

Analysis

Think-aloud data. An initial framework for analyzing the think-aloud data was developed by the 3 researchers who read and reread the transcripts using the constant-comparative method to identify the strategies and code the examples (Glaser & Strauss, 1967). Strategic reading processes were defined as any overt purposeful effort or activity used on the part of the reader to make sense of the printed material with which he or she was interacting. Pearson, Roehler, Dole, and Duffy (1992) described strategies as conscious and flexible plans that readers apply and adapt to particular texts and tasks. Some form of verbalization was necessary for strategies to be recognized but students did not have to explicitly identify or define them.

Saville-Troike (1982) adapted Hymes (1972a, 1972b) classification scheme for use in research focused on language. For this research, the concept of the communicative event has been adapted for looking at reading strategies.

Saville-Troike defines the communicative event as a unit of language that includes a specific set of characteristics: the same general topic, the same participants, the same language variety, the same rules for language use, and the same setting. The components of communicative events that are most germane to the study of strategies are those of purpose or function, and topic. Saville-Troike claims that a communicative event is over when there is a change in the focus of attention. She states that one of the purposes of this kind of analysis is to "make explicit the systems of understanding which are implicit" (1982, p. 110). Her proposal for making systems of understanding explicit is particularly appropriate for the study of reading strategies of proficient bilingual readers because these systems are for the most part unseen and taken for granted by those who employ them.

The different categories developed are not mutually exclusive. When the children's thinking demonstrated characteristics reflective of more than one category, multiple codes were used (see Table

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3). Initially 19 different strategies were identified but further analysis resulted in the specification of 22 strategies (see Table 2; Appendix E contains an example and definition for each strategy). A HyperCard program was designed specifically for the purpose of organizing and categorizing all of the oral discourse produced by each of the student participants.

[Insert Table 2 about here.]

All of the reading strategies were examined within an overlapping framework. The three strategy designations, text-initiated, reader initiated, and text- and reader-initiated, served as a useful device for early data analysis and categorization. Categorizing the 22 strategies into one of these three groups also facilitated conceptualization of how the strategies related to one another and the various purposes they served.

Interview data. The interview data were coded and analyzed by using the constant-comparative method (Glaser & Strauss, 1967). Themes were identified that characterized the students' metacognitive knowledge of self, task, and strategy (Baker & Brown, 1984). Findings from the think-aloud protocols and interview data were combined for each student.

[Insert Table 3 about here.]

Prior-knowledge and passage-recall data. Data from the prior-knowledge measures and passage recall protocols were used to triangulate the findings (i.e., further understand the students' identification and use of reading strategies and passage comprehension). Although student performance on the prior-knowledge measures was scored and compared to see how familiar the students were with the reading topics and genres, information elicited on the prior-knowledge measures (e.g., whether the student correctly identified a key vocabulary word) primarily was used to document the influence of prior knowledge on students' reading as revealed in the think-aloud transcripts (see Appendix G). The passage-recall protocols were scored according to the system designed by Valencia and Greer (1986). However, the protocols principally were used to understand the extent to which the students comprehended the passages (see Appendix H).

Combining the findings. Once each individual student's strategy use and reading comprehension was characterized, patterns of reading performance were identified for each of the three groups of readers. The three groups were compared to discover how they differed and resembled one another. Qualities that could be inferred from the students' statements and strategic processing that characterized them as readers were considered especially important.

We adopted an integrated, thematic approach for presenting the findings of this research. In essence, each of the themes uncovered during analysis are presented and illustrated with actual data samples. In addition, Tables 4 and 5 present the mean number of times selected strategies were employed by the three groups of readers. Finally, data displays are presented in Appendix F that include one example of how each of the 14 student participants responded to the same text excerpt.

[Insert Tables 4 and 5 about here.]

Results and Discussion

What Proficient Latina/o Readers Know About Reading: Declarative Knowledge

Unitary view of reading. During the interviews, 5 of the 8 proficient Latina/o readers indicated that Spanish reading and English reading were essentially the same activity. They seemed to follow a unitary view of reading. In other words, they viewed learning to read in another language as simply learning

a new set of vocabulary and, perhaps, mastering another phonological system. Their perspectives are exemplified below:

Marcos: When I learned to read in English I just needed to know the pronunciation and the spelling of the words. Because I could read inSpanish and English. [I] just needed to know how to say the words.

Lisa: [E]verything's the same what you have to know (to read in English and Spanish).

Alberto: There aren't really any differences (between reading in English and Spanish), I mean they're both based on the same thing, how you understand it, how you read it, how you take it and how you evaluate it and all that.

Knowledge of bilingual strategies. Eight of the proficient Latina/o readers indicated during either the interviews or the think-alouds that they knew about the strategy searching for cognates. For example, Gilda demonstrated that she knew the value of English-Spanish cognate relationships:

Gilda: Yo sé que hay unas palabras que se parecen pero no sé que quiere decir. *Proportional*, hmm. Estoy buscando que quiere decir, no sé. (I know that there are some words that look alike, but I don't know what it means. Proportional, hmm. I'm looking for what it means, I don't know.)

Other comments made by the proficient Latina/o readers also demonstrated their understanding of this strategy:

Samuel: No, porque no hay ni una palabra en inglés que se parezca a esta palabra. (No, because there isn't even one word in English that looks like this word.)

Kathy: [A]quí hay una palabra que no sé . . . en español pero es *disintegrate* in inglés. ([H]ere is a word that I don't know in Spanish but it is *disintegrate* in English.)

Four proficient Latina/o readers described translating as a strategic activity. Two students said that upon encountering an unknown vocabulary word, they attempted to substitute an alternative word from their other language. Another mentioned that when he possessed more prior knowledge of a topic learned in Spanish, he translated the text into Spanish to better remember this information. Gilda said she translated when reading in her weaker language. She felt, however, that translating could be costly in terms of time and effort and should be used cautiously so as not to interfere with comprehension. She discussed the difficulty that translating caused her when trying to remember material during a passage recall:

Gilda: I get confused [translating for a sentence or paragraph].

Investigator: So you just do it [translate] for a word?

Gilda: Yeah, just a word. When I was little, when I just came here, I would try to translate and that's, I would always translate to see if I understood it, and then I would know what the words meant.

The use of searching for cognates and translating as beneficial reading strategies have not been widely discussed in the reading literature. This research suggests that proficient Latina/o readers are capable

of describing these strategies, and that they know how to use them. Paris, Lipson, and Wixson (1983) call this declarative and procedural knowledge.

The Strategies Proficient Latina/o Readers Use While Reading

Resolving unknown vocabulary. The proficient Latina/o readers focused considerably more attention on unknown vocabulary as they thought aloud than did the proficient monolingual readers (see Table 4). This activity did not, however, radically interfere with their overall comprehension (as indicated by the passage recalls, see Appendix H). Their determination in resolving problems often resulted in accurate identifications of unknown vocabulary. The proficient Latina/o readers used a variety of techniques to construct working definitions of unknown vocabulary such as using context, invoking relevant prior knowledge, questioning, inferencing, searching for cognates, and translating.

Gilda made use of several strategies when she interacted with the word *wantonly* as she read the English narrative: "Want, wan tan ly. What is that?" Her comment, "Well, I don't know the meaning of a word," demonstrated her interest in this vocabulary item. Her determination led her to specify the item's grammatical function: "[T]hey're talking about a kind of way they were killed . . . . Gilda resolved the situation to her satisfaction by reading ahead:

> Gilda: [B]ecause the next sentence, it says that . . . . I'm trying as it were to make . . . Oh! OK, so he wants to do this because people, he thinks people were like really mean and stupid and everything, now I know.

Pamela relied on what she knew about extinct animals to help her define the term extinct:

> Pamela: [E]xtinct no quiere decir [doesn't that mean] like when they're almost gone, like the African elephant, I think there aren't any more.

Samuel built a case using logic and context to determine the meaning of the Spanish word *sobretodo* (overcoat) while reading the Spanish narrative text:

> Samuel: Pués esto de sobretodo, no sé que ha de ser. (Well, this about *sobretodo*, I don't know what it would be.)
>
> Investigator: ¿Y qué piensas?
>
> Samuel: Pués las pistas que ponen no muy bien dicen porque es bastante viejo, de muy buena clase, muy limpio y muy remendado. (Well the clues that they give do not say much because it's pretty old, of a very good type, very clean and well mended.)
>
> Investigator: ¿Entonces? (So then?)
>
> Samuel: Pués hay muchas cosas que es viejo, buena clase, remend. . . (Well, there are a lot of things that is old, good type, mend. . . .)

Samuel attempted to define the word, but he admitted that he was unsure about what it meant:

Samuel: Será como, no sé si un bastón o algo, no sé la verdad porque es sobretodo. [N]o creo que sea un diamante o algo, no la verdad no sé. (It might be like, I don't know if it's a cane or something, in truth I don't know because it's *sobretodo*. I don't think that it would be a diamond or something, in truth I don't know.)

Finally, after reading the sentence, "Pero, este abrigo vale lo menos diez –añadió Alfonso" (But this coat is worth at least ten –added Alfonso), Samuel made the critical inference that a *sobretodo* is also an *abrigo*:

Samuel: Oh, acá dice es un abrigo el sobretodo. (Oh, here it says a coat is a *sobretodo*.)

Monitoring comprehension across two languages. The proficient Latina/o readers carefully monitored their comprehension by identifying comprehension obstacles. They frequently reread or asked questions when they faced difficulties. Alberto indicated he was monitoring his comprehension after he read the following sentence, "These, almost ready to be taken from the tank, are tiger cubs." He commented, "This sentence doesn't make sense." He reread the sentence aloud and then added:

Alberto: Oh! OK, I sometimes read the sentence out loud, then it makes more sense than when I read it to myself.

Samuel demonstrated how important comprehension monitoring can be to a reader trying to capture the gist of a story:

Samuel: So maybe I was wrong. I finished but I really didn't get what was happening. I'm checking something I said wrong.

It was Samuel's monitoring that triggered further action, and his willingness to rethink his assumptions facilitated his reaching the following conclusions:

Samuel: Ya tiene más sentido este cuento. A lo mejor estos extraterrestes es el biólogo que hace más gente y todo eso. . . . (This story makes more sense now. Maybe these aliens is [are] the biologist that makes more people and all of that.)

Kathy was clearly monitoring when she noted the lack of information in the English narrative text regarding the identity of a creature, "[A]nd then he says just one, what is it? [T]hey're not saying what it is . . . ." Kathy did not abandon her concern, which she mentioned four different times, before she read the sentence, "Yes. It's a man." At that point she accepted the textual information, but she stated how it clashed with her understanding and expectations:

Kathy: [T]hat was surprising because I thought it was some kind of dangerous animal cuz the visitor asked, is it dangerous?

Connecting prior knowledge with text. Integrating prior knowledge with textual information is crucial for comprehending text (Anderson & Pearson, 1984). The proficient Latina/o readers showed how important this strategy was by making explicit their prior knowledge of relevant topics. Lisa's response

while reading a Spanish expository text on uses of solar energy exemplified successful integration of relevant prior knowledge with textual information:

> Lisa: Y en Chicago me acordé que vi en las noticias que hay un laundrymat, una lavandería, donde ellos no meten dinero, la energía lo obtienen del sol. . . . (And in Chicago I remember that I saw on the news that there is a laundrymat, where they don't insert money. They get the energy from the sun. . . .)

Kathy read the sentence, "The flat shape of the flea allows it to move forward very quickly among the hairs or feathers of the animal on which it lives," from the English expository text, "Flea," and then supplied the following relevant prior knowledge: "Probably like a dog or a cat. [M]aybe even a bird because my bird had fleas and it died."

While reading the "Octopus" passage, Betty accessed relevant prior knowledge:

> Betty: I learned in fifth grade something [about] worms. I don't remember if they cut off their head if they would grow two heads. . . .

Then, when Betty read about the siphon of the octopus, she made an analogy to something she thought was similar: "[S]iphon, it's a funnel shaped opening under the head, maybe it's like a whale how it squirts out water."

Making inferences and drawing conclusions. Inferencing is a strategy that depends heavily on the use of prior knowledge. The proficient Latina/o readers made large numbers of inferences while reading both Spanish and English text (see Tables 4 and 5). They often qualified their inferences with "maybe" or "probably," signifying a willingness to revise their thoughts. The proficient Latina/o readers showed flexibility in making inferences and in drawing on their prior knowledge to make predictions and to confirm or disconfirm their inferences. A characteristic of their inferences was that they were apt to make inferences dealing with important aspects of the text, and they checked the "fit" of their inferences to see if they made sense. For example, Betty compared her very specific and correct inference that the creature in "The King of the Beasts" was a baby with statements made by the main characters:

> Betty: It was a baby maybe. [T]hat's why he said he was giving it all the love and he said it was dangerous. So I don't know why they would say it was dangerous if it was just a baby.

Alberto inferred an important outcome of "The King of the Beasts," but he was willing to wait until the end of the story to confirm his prediction:

> Alberto: [T]here might be a chance that I finish the story and . . . that all human beings might be extinct for all the pollution and stuff.

Gilda inferred important information for understanding the humor in the Spanish narrative, "Como Estos Hay Pocos":

> Gilda: Oh! ¡Ya sé que va a hacer él! Que el abrigo no es de él, es del señor. (Oh! Now I know what he's going to do! So the coat is not his, it belongs to the man.)

Gilda's last comments during the retelling capture the essence of her comprehension and provide a glimpse of how she drew conclusions by relying on the strategy inferencing:

> Gilda: Entonces él se llevó un abrigo por menos dinero porque era listo. [É]l burló al señor. (So then he took a coat for less money because he was smart . . . he mocked the man.)

Asking questions while reading. Questioning was a strategy that the proficient Latina/o readers exploited for purposes of comprehension. Of interest is that although they did not ask large numbers of questions (see Tables 4 and 5), they often asked relevant questions that were tied to the resolution of problems. The following question, asked by Gilda as she read "The King of the Beasts," focused on a key element of the story:

> Gilda: Well, why are they making a man, aren't they people? They're biologists aren't they? Why would they be scared if it was a man?

In fact, Gilda's question allowed her to determine that "they" were not human beings. The main characters in this story were actually extraterrestrials but this information was not explicitly stated.

Kathy's question in the following quotation showed that she also focused attention on the identity of the unknown creature featured in the English narrative text:

> Kathy: [F]irst the biologist says poor little thing it's so alone but I'll give it love and then the visitor asks is it dangerous. But what are they talking about? I don't know what they're talking about.

Marcos posed a question while reading the Spanish narrative text, the answer to which helped him understand the problem faced by the protagonist:

> Marcos: Él está trabajando mientras que todos estan con abrigos, y dice que va a buscar una tienda, un abrigo. ¿Pero, cómo lo va a hacer así con el frío que había, sin abrigo él? (He is working while everyone else has a coat, and it says that he is going to look for a store, a coat. But how is he going to do it when it is so cold outside, without a coat?

Similarities and Differences in Strategy Use Across Languages for the Proficient Latina/o Readers

The proficient Latina/o readers made less use of the strategy invoking prior knowledge while reading Spanish than when reading English (Tables 4 and 5). Based on their greater monitoring of Spanish text and the poorer quality of their Spanish passage recalls, it seems that reading in Spanish was a more difficult task for them.

The proficient Latina/o readers also monitored their reading of Spanish text more so than when reading English text. Much of this monitoring was in connection with the identification of unknown vocabulary. This suggests that the proficient Latina/o readers adjusted their approach depending on the perceived difficulty of the task.

The proficient bilingual readers made use of two strategies, translating and searching for cognates, that reflect their status as second-language learners. All but a few instances of their use of these strategies were limited to their reading of Spanish text. Because the students used the bilingual strategies

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predominantly while reading in their weaker language, Spanish, it is our belief that these strategies often served a compensatory function.

The following examples of the searching for cognates strategy, demonstrate the process followed by the proficient Latina/o readers, and provide a general impression of how this strategy enhanced their comprehension:

Alberto: Cantidades, eso quiere decir muchas o como en inglés, quantities. (Quantities, that means a lot or like in English, quantities.)

Gilda: ¿Energía térmica? (Thermal energy?)

Investigator: ¿Y qué piensas? (And what are you thinking?)

Gilda: Thermal energy.

The proficient Latina/o readers used the strategy of translating almost exclusively while reading in Spanish. Translating occurred most frequently when the students came across unknown vocabulary. The process of coding this strategy was occasionally assisted when the students demonstrated difficulty with polysemous vocabulary. Betty, for example, translated the word *Tierra* as *dirt* instead of *Earth*, and *estado* as *state* rather than *stage*.

Translating helped students when they viewed it flexibly and were willing to revise their understanding of the text. Although Lisa was quite self-conscious in the following example, her use of translating was successful:

Lisa: [Y] se forma un agujero negro y esas dos palabras se oyen como *black hole*, . . . porque agujero *it's like hole and* negro *is black and it has to be black hole*. ([A]nd it forms a black hole and those two words sound like black hole, . . . because *agujero* it's like hole and *negro* is black. . . .)

Differences were noted in the ability of the bilingual readers to recall information depending on whether they were reading in Spanish or English. The difficulty both groups of bilingual students experienced recalling the Spanish expository texts may be explained, as it was by 4 of the bilingual students, by a lack of experience and instruction in Spanish reading. With the exception of one student, none of the proficient Latina/o readers had participated in a program of bilingual education beyond grade 2 (see Table 1). The proficient Latina/o reader who had been enrolled in a bilingual program through grade 5 also had a difficult time reading the expository Spanish text. No such difficulties were noted in the bilingual readers' recall of Spanish narrative text, which may indicate that the topics of the Spanish expository texts were less well known, but this was not reflected in their prior-knowledge scores (see Appendix G).

Metacognitive Strategies That Facilitate Transfer of Strategy Knowledge from the First Language to the Second, or Vice Versa

Several of the proficient Latina/o readers mentioned specific strategies that could be transferred from one language to another. Strategies they named were questioning, rereading, evaluating, and the notion that reading must make sense regardless of language, in other words, monitoring. One student also stated that reading in her weaker language, Spanish, was simply a matter of matching her Spanish oral proficiency with English reading ability.

Three of the proficient Latina/o readers explicitly transferred information learned in their other language as they thought aloud. That the proficient Latina/o readers were aware of the transference of knowledge across languages can be inferred from comments such as that made by Lisa, *"it's familiar to me* porque en inglés nos enseñan todo esto" ("It's familiar to me because in English they teach us all of this"). Other researchers have invoked the notion of strategy transfer to explain why students who are good readers of their native languages are often good readers of English (Miramontes & Commins, 1989; Saville-Troike, 1984). Data from this study provide examples of what bilingual transfer looks like in practice.

Marcos demonstrated his declarative knowledge of strategy transfer and suggested that this knowledge is easier to learn in the student's dominant language:

> Marcos: Because let's say there are rules to be a good reader, like you have to read carefully if it's something difficult to read and read however you want if it's easy. And in Spanish you could learn those rules easier cuz you know more Spanish than English if you are Latin American, but if you are an American, it should be easier in English than in Spanish. Las novas me recuerdan con los libros que leo en inglés, las estrellas. A mi me interesa mucho este artículo. (The novas remind me of the books that I read in English, the stars. I'm very interested in this article.)

Lisa discussed how she made use of strategic knowledge learned in her English reading class and on her own to understand Spanish text:

> Lisa: Well, one of 'em [teachers], they taught us how to pronounce a word. They like, if we didn't know how to pronounce that word, she told us, "cover up, um, half of the word, try and pronounce the first word, then go back to the last part and try and pronounce that and then pronounce it altogether." And that sometimes helps me in Spanish. [L]ike in English you have to know how to answer the question and in Spanish you have to also know how to answer the question. In English and in Spanish you have to know how to pronounce the words, and like if you don't think a sentence sounds right, you have to go back and read it again to make it sound right.

The Extent to Which the Cognitive and Metacognitive Strategies of Proficient Latina/o Readers Differ from Those of Proficient Anglo Readers

The proficient Anglo readers rarely noted problems while reading. Their monitoring was minimal. In and of itself, the lack of visible monitoring might be construed as a sign that these readers were not comprehending as fully as they should. Their passage recalls demonstrated, though, that they comprehended much of what they read, suggesting that they found the texts to be at a low level of difficulty (see Appendix H). The few times that these readers did note difficulties, they resolved them quickly by making inferences and invoking prior knowledge. The proficient Anglo readers easily integrated prior knowledge with textual information by drawing upon rich semantic networks and by demonstrating a sensitivity to textual information. Thus, it appears that overt monitoring was rarely necessary for these students.

Michelle produced the richest think-aloud protocols of the proficient Anglo readers, and she differed from the proficient Latina/o readers in intriguing ways. She stressed the importance of comprehension and she discussed many important qualities of reading in general. For example, Michelle made a distinction between basic and more advanced vocabulary. She believed that a knowledge of basic vocabulary was necessary to be a good reader. She knew that good readers read frequently and that

they read large amounts of material. She said that good readers were fluent, which she described as not stumbling or stopping while reading.

Bruce gave an example of his understanding of biologists by referring to the one in the story, "The King of the Beasts" as a professor, and Tricia said that he might be an archaeologist. This demonstration of knowledge hinted at a fairly well-developed understanding of this profession that was unmatched by the proficient Latina/o readers. Michelle possessed keen insight about the desirability of invoking prior knowledge:

> Michelle: I relate it [the text] to something I've seen before or whatever . . . like if I already knew from the movie "20,000 Leagues Under the Sea" that an octopus lives in the sea, you remember that . . . the things about the octopus because it was in the movie . . . .

The proficient Anglo readers checked the fit of their inferences by making sure that they did not conflict with textual information. In this they were similar to the proficient Latina/o readers. They differed in that they were more likely to be concerned with detail. For example, Bruce said that the characters in the English narrative text were *in* a tank, but then revised his understanding by stating that they were *near* a tank. The prepositions *in* and *near* can change the meaning of a text. It was this level of detail that distinguished the Anglo students from the proficient Latina/o readers. Although qualitative differences existed between the two groups of proficient readers, they were very similar in the overall mean number of times they made connections with their prior knowledge and in the number of times they made inferences (see Table 4).

The strategy "focusing on vocabulary" was conspicuously absent in the thinking aloud of the proficient Anglo readers. A case can be made that the proficient Anglo readers did not need this strategy as much as the proficient Latina/o readers. While the proficient Latina/o readers may be more sensitive to the need to define and comprehend unknown vocabulary, it is probably also true that proficient Anglo readers simply know more English vocabulary.

The Extent to Which the Cognitive and Metacognitive Strategies of Proficient Latina/o Readers Differ from Those of Less-proficient Latina/o Readers

The less-proficient Latina/o readers most closely resembled the proficient Latina/o readers in the number of unknown vocabulary items they came across (see Tables 4 and 5). They differed, however, in many ways from the proficient Latina/o readers. A major difference was that instead of having comprehension as their goal for reading, they seemed to view finishing the task as most important. Two of the 3 less-proficient Latina/o readers, Celina and Catalina, consistently exclaimed, "I'm done" as soon as they reached the last word of a text. In contrast, the proficient Latina/o readers continued to question their comprehension or to mull over their understanding when they finished reading a text.

The proficient Latina/o readers were determined to understand what they read, whereas the less-proficient Latina/o readers could identify problems (monitor) but did not often resolve them. In fact, both groups of Latina/o readers were more likely than the Anglo readers to make comments concerning comprehension failures (see Table 4). Whether the less-proficient Latina/o readers made these comments due to a lack of knowledge or motivation–or a combination of both–is unclear. For example, Celina indicated that she did not recognize the word *wantonly* when reading "The King of the Beasts."

Her only concern, though, seemed to be to approximate the pronunciation of the word. After doing so, she abandoned interest in the item:

Celina: Is this want only?

Investigator: What do you think?

Celina: Yeah.

Consistent with their goal of finishing rather than comprehending, the less-proficient Latina/o readers used approximately the same strategies whether reading in Spanish or English and whether reading narrative or expository text. For example, Catalina often used prediction as a strategy when reading expository text. The proficient Latina/o readers only used this strategy when reading the narrative pieces. Golinkoff (1975-1976) believed that poor readers approach all texts in essentially the same way. This was true of the less-proficient Latina/o readers. This research extends Golinkoff's findings to show that less-proficient Latina/o readers not only read narrative and expository text in similar ways but that they also fail to adjust their use of strategies when reading texts in other languages.

The less-proficient Latina/o readers tended to adopt one interpretation of a text, or part of it, even when presented with contradictory information. Unlike the proficient Latina/o readers who were tentative in their inferences and drawing of conclusions, the less-proficient Latina/o readers often tried to force subsequent text information to fit earlier interpretations. For example, Celina inferred that the unidentified creature in "The King of the Beasts" was an animal. She did not revise her comprehension even when faced with explicit textual information to the contrary:

Celina: Well, it said it's a man, and I don't think it was a man cuz a man couldn't be more dangerous than an elephant or a tiger or a bear.

On the few occasions that the less-proficient Latina/o readers invoked prior knowledge, they were as likely to bring irrelevant prior knowledge to bear on their interpretation of the text as they were to bring relevant prior knowledge. Michael, for example, when reading the "Flea" stated, "I don't know why I got the picture [in my mind] of a wrestling ring." It is impossible to know why he visualized this, because no mention of wrestling or a ring occurred in the passage.

Some interesting differences surfaced between the two groups of bilingual readers with respect to their views of bilingualism. The less-proficient Latina/o readers were more apt to see bilingualism as damaging than were the proficient Latina/o readers. Michael, for instance, said that children learning English as a second language were much more likely to be in the lower reading group than native-English speakers. The poor readers felt that as second-language learners, knowledge of their first language caused them confusion when reading. Celina said that native speakers of English had a advantage over native Spanish speakers and remarked, "I get mixed up cuz I talk Spanish and English."

The less-proficient Latina/o readers believed that the two languages were more different than similar and that knowledge of one was not useful for reading the other. Catalina mentioned that the vowel sounds in Spanish and English were not the same. This belief may have been one of the reasons why they did not make use of the bilingual strategies. Because they saw the two languages as distinct, they failed to make connections. They did not search for cognates, translate (to any great extent), or actively transfer knowledge and strategies.

Conclusion

Various opportunities, as well as obstacles surfaced for the proficient and less-proficient Latina/o readers as they read texts in Spanish and English. Opportunities arose for the proficient Latina/o readers when they identified comprehension problems and then tried to resolve them using a variety of strategies. The strategies of invoking prior knowledge, inferencing, questioning, and monitoring were notable in this regard. Hosenfeld (1978) and Vygotsky (1962) speculated that bilingual persons might have a special awareness of language and its functions. Evidence from this study suggests that proficient Latina/o readers possess an enhanced awareness of the relationship between Spanish and English, and that this awareness leads them to use the bilingual strategies of searching for cognates, transferring, and translating. The awareness that reading in Spanish or English is essentially the same activity and that knowledge of both languages can enhance comprehension was an opportunity seized by the proficient Latina/o readers.

Obstacles, although more prevalent in the thinking of the less-proficient Latina/o readers, also caused problems for the proficient Latina/o readers. The chief obstacle for both groups was unknown vocabulary. The proficient Latina/o readers dealt with this problem in many ways. Searching for cognates was one way they turned an obstacle into an opportunity. Even so, not all vocabulary difficulties could be overcome. The less-proficient Latina/o readers faced the obstacle of not knowing what the goal of reading was. Although they often monitored problems, they were unsure of how to resolve them. This seemed to be the result of having only a limited number of repair strategies. Finally, the less-proficient Latina/o readers did not know how to use knowledge of Spanish to enhance their comprehension of English text and vice versa.

The proficient Anglo readers did not evidence a need to determine the meaning of unknown vocabulary. They also often invoked prior knowledge that facilitated text comprehension. In many ways, they faced a different task when reading than did either group of bilingual readers. They were able to devote more attention to comprehension because they did not face as difficult a task.

Less-proficient Latina/o readers need to be made aware of the similarities between the writing systems of both languages. Future research could explore what occurs when less-proficient Latina/o readers are given this information. Less-proficient Latina/o readers may be closing off a vast warehouse of potential prior knowledge by not accessing information gained via their native language. Research should examine under what conditions bilingual readers are prepared to transfer information learned in one language to the reading of another.

While bilingual students need to know everything about learning vocabulary that monolingual students do, they also need to be made aware of additional resources they possess and special problems they face as second-language learners. For example, they need to be reassured that not knowing some English vocabulary is to be expected. Recognizing that a word is unknown is a special kind of monitoring activity. Once unknown vocabulary has been recognized by bilingual readers, they will first need to determine how important the word is for understanding the text, and then continue their monitoring until they can determine the word's meaning. Learning efficient use of context, how to invoke relevant prior knowledge, and how to make inferences could contribute to their comprehension abilities.

The strategy searching for cognates possesses obvious potential for bilingual readers to learn unknown vocabulary. Use of the unknown word's spelling, comparing the sound of the unknown word to known words in the other language's lexicon, and finally testing the meaning of words that look and sound similar from the other language, are all possibilities for constructing meaning that draw on the strengths of bilingual students.

Few doubt that knowledge about language and the ability to successfully manipulate and utilize language are useful, and even causal factors in reading success. The proficient Latina/o readers knew more about the relationship between their two languages, and they knew more about how to put that knowledge into action than did the less-proficient Latina/o readers. Possible implications for education might be to *develop approaches to reading instruction for bilingual Latina/o children that emphasize the relationship* between Spanish and English. Reading instruction for these children could then stress awareness of language by focusing on similarities and differences.

Teachers could also benefit from an awareness of the benefits of transfer of knowledge across languages and an understanding of how native language reading ability can be useful for learning to read English. The idea that transfer of strategies from one language to another can compensate for lack of language proficiency (Langer et al., 1990) found some justification in this work. The proficient Latina/o readers implemented reading strategies differently depending on the language of the text. Carrell (1989) also found that readers modified their strategic processing on the basis of the language of the text.

Instruction concerning translation as a strategy needs to be approached cautiously. Results from this study suggest that while translating can at times be useful, on occasion, it may also harm comprehension. Excessive use of any strategy can harm students' construction of meaning, but translating may require more cognitive resources than do others. Translating may make more sense during the initial period of learning English.

The idea of knowledge transfer is often touted as justification for bilingual education, yet seldom are specific mechanisms made available to educators and others working with language-minority students. Emphasizing the relationship between Spanish and English can provide Latina/o students specific information, such as vocabulary knowledge, but it may also help them view their native language as a previously untouched fund of information useful for reading. At any rate, these relationships, understood to some degree by successful Latina/o readers, need to be made more explicit. Knowing what opportunities are available and what obstacles await the unwary should benefit both bilingual readers and those who teach them.

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Table 1

Student Background Information

Student	Age	Current grade level	Preferred language	Birthplace	No. of years in U.S.	U.S. schooling grade levels	Bilingual schooling
Proficient Latina/o Readers							
Marcos	12	6	English	Guatemala	3.75	5.5,6	K,1 (in Guat.)
Pamela	12	6	English	Mexico	5	1-6	1,2
Betty	11	6	Either	U.S.	11	K-6	0
Kathy	11	6	English	U.S.	11	K-6	0
Samuel	12	6	Either	Mexico	10	K-6	K-2
Lisa	11	6	English	Mexico	10.5	K-6	K-2
Alberto	13	7	English	Mexico	10	K-7	0
Gilda	13	7	English	Guatemala	5	2-7	2-5
Less-Proficient Latina/o Readers							
Catalina	12	6	English	U.S.	12	K-6	K-4
Michael	12	6	Either	Mexico	5	2-6	2-3
Celina	11	6	English	U.S.	11	K-6	K-4
Proficient Anglo Readers							
Michelle	12	6	English	U.S.	12	K-6	N/A
Tricia	12	6	English	U.S.	12	K-6	N/A
Bruce	12	6	English	U.S.	12	K-6	N/A

Table 2

Classification of Reading Strategies Used

Text-initiated Strategies	Text-initiated and Reader-initiated Strategies	Reader-initiated Strategies
Using Text Structure Focusing on Vocabulary Summarizing (restating and paraphrasing) Using Context Rereading Decoding	Inferencing Questioning Predicting Confirming/Disconfirming	Invoking Prior Knowledge Monitoring Visualizing Evaluating Noticing Novelty Demonstrating Awareness *Bilingual Strategies** Searching for Cognates Translating Code-switching (transferring)

*Used only by the bilingual readers

Table 3

Example of Coded Transcript

Portion of Text Read by Participant During the Middle Ages, millions of people died in outbreaks of bubonic plague, and it is now known that this terrible disease was carried into houses by rats, whose fleas bit people and gave them the bubonic germs. (See Black Death.)	
Participant Response	**Codes Assigned to Transcript**
[Y] es la gente que se muere porque muchas ratas muerden, o sea muerden la comida de uno y allí se la come uno a veces y se muere uno porque tiene una infección la rata pero esa infección de la rata se la dió la flea porque como la flea tiene pelos o sea la rata tiene pelos. [A]nd it is the people that die because many rats bite, or rather they bite the food that one eats and one eats it there and he/she dies because the rat is infected but the rat was infected by the flea because the flea has hairs or rather the rat has hairs.	Inferencing, translating, paraphrasing

Table 4

Mean Number of Selected Reading Strategies for English Texts by Group and Text Type

	English Narrative Text			English Expository Text			Mean Number of Strategies for English Texts for all Readers		
	PLR*	LLR	PAR	PLR	LLR	PAR	PLR	LLR	PAR
Focusing on Vocabulary	4.75	2.00	0.33	3.50	4.00	0.33	8.25	6.00	0.66
Summarizing	4.13	5.33	9.67	13.13	15.33	20.67	17.26	20.66	30.34
Monitoring	6.63	3.67	2.00	3.88	3.67	3.33	10.51	7.34	5.33
Demonstrating Awareness	2.75	1.33	0.33	5.00	5.33	7.67	7.75	6.66	8.00
Invoking Prior Knowledge	1.75	1.00	1.33	5.88	4.00	7.00	7.63	5.00	8.33
Visualizing	0.13	1.00	0.67	0.50	5.33	5.00	0.63	6.33	5.67
Searching for Cognates	0.75	0.00	--**	0.38	0.33	--**	1.13	0.33	--**
Translating	0.00	0.00	--**	0.13	0.00	--**	0.13	0.00	--**
Making Inferences	14.0	5.00	12.00	15.88	8.67	16.00	29.88	13.67	28.0
Questioning	1.88	5.00	2.33	3.50	7.00	6.00	5.38	12.00	8.33
Total	36.77	24.33	28.66	51.78	53.66	66.00	88.55	77.99	94.66

*PLR = Proficient Latina/o Readers
LLR = Less-proficient Latina/o Readers
PAR = Proficient Anglo Readers

**Not Applicable

Table 5

Mean Number of Selected Reading Strategies for Spanish Texts by Group and Text Type

	Spanish Narrative Text		Spanish Expository Text		Mean Number of Strategies for Spanish Texts for Bilingual Readers	
	PLR*	LLR	PLR	LLR	PLR	LLR
Focusing on Vocabulary	6.13	2.67	5.75	3.33	11.88	6.00
Summarizing	5.75	10.33	10.25	10.67	16.00	21.00
Monitoring	6.25	2.00	9.63	3.67	15.88	5.67
Demonstrating Awareness	2.00	0.00	7.13	6.00	9.13	6.00
Invoking Prior Knowledge	0.75	0.33	3.75	0.67	4.50	1.00
Visualizing	0.00	2.67	0.25	2.33	0.25	5.00
Searching for Cognates	1.00	0.00	3.25	0.00	4.25	0.00
Translating	3.38	4.67	5.63	3.00	9.01	7.67
Making Inferences	15.00	6.00	11.0	5.33	26.00	11.33
Questioning	1.25	3.67	4.25	5.33	5.50	9.00
Total	41.51	32.34	60.89	40.33	102.40	72.67

*PLR = Proficient Latina/o Readers
LLR = Less-proficient Latina/o Readers
PAR = Proficient Anglo Readers

APPENDIX A

Unprompted English Narrative Passage

The King Of The Beasts*
Philip José Farmer

The biologist was showing the distinguished visitor through the zoo and laboratory.

"Our budget," he said, "is too limited to re-create all known extinct species. So we bring to life only the higher animals, the beautiful ones that were wantonly exterminated. I'm trying, as it were, to make up for brutality and stupidity. You might say that man struck God in the face every time he wiped out a branch of the animal kingdom."

He paused, and they looked across the moats and the force fields. The quagga wheeled and galloped, delight and sun flashing off his flanks. The sea otter poked his humorous whiskers from the water, The gorilla peered from behind bamboo. Passenger pigeons strutted. A rhinoceros trotted like a dainty battleship. With gentle eyes a giraffe looked at them, then resumed eating leaves.

"There's the dodo. Not beautiful but very droll. And very helpless. Come, I'll show you the re-creation itself."

In the great building, they passed between rows of tall and wide tanks. They could see clearly through the windows and the jelly within.

"Those are African elephant embryos," said the biologist. "We plan to grow a large herd and then release them on the new government preserve."

"You positively radiate," said the distinguished visitor. "You really love the animals, don't you?"

"I love all life."

"Tell me, " said the visitor, "where do you get the data for re-creation?"

"Mostly, skeletons and skins from the ancient museums. Excavated books and films that we succeeded in restoring and then translating. Ah, see those huge eggs? The chicks of the giant moa are growing within them. These, almost ready to be taken from the tank, are tiger cubs. They'll be dangerous when grown but will be confined to the preserve."

The visitor stopped before the last of the tanks.

"Just one?" he said. "What is it?"

"Poor little thing," said the biologist, now sad. "It will be so alone. But I shall give it all the love I have."

"Is it dangerous?" said the visitor. "Worse than elephants, tigers and bears?"

"I had to get special permission to grow this one," said the biologist. His voice quavered.

The visitor stepped sharply back from the tank. He said, "Then it must be . . . but you wouldn't dare!"

The biologist nodded.

"Yes. It's a man."

---

*From *Mad Scientists*, by I. Asimov, M. H. Greenburg, & C. Waugh, 1982, Milwaukee: Raintree Publications. Copyright 1982 by Raintree Publications. Reprinted by permission.

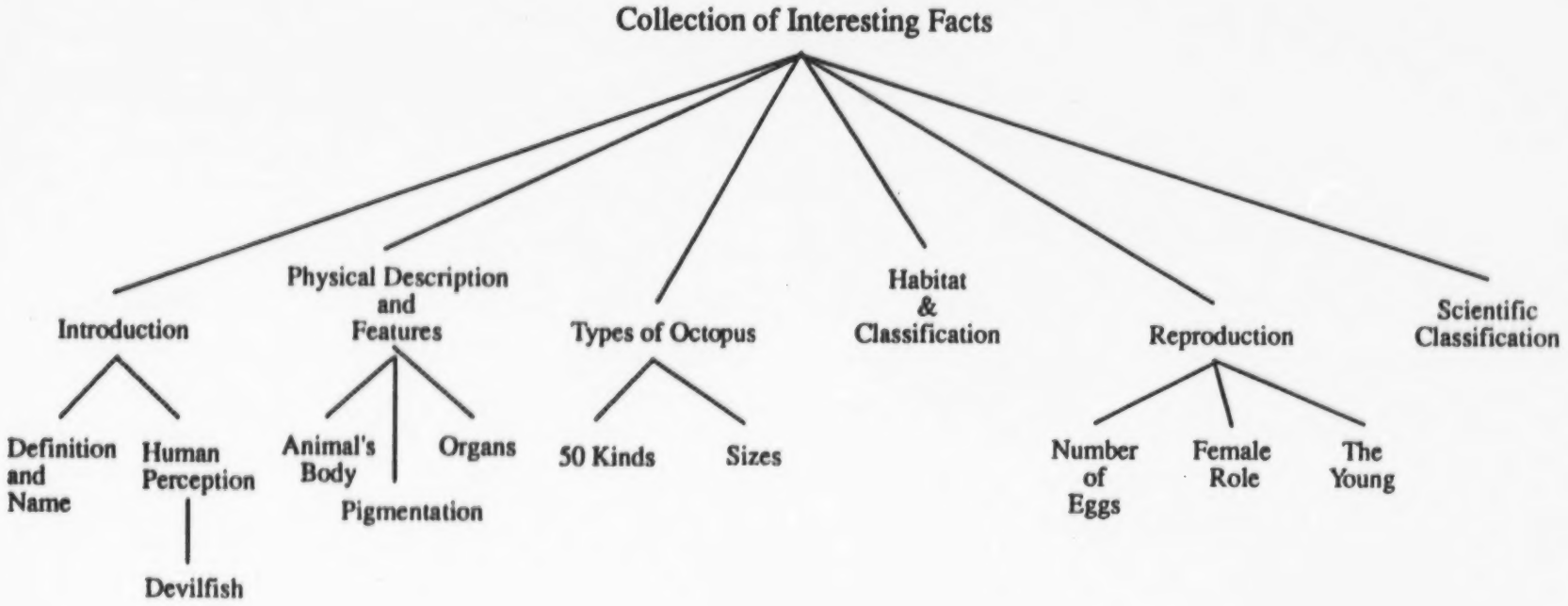
APPENDIX B

Language Self-Report Matrix

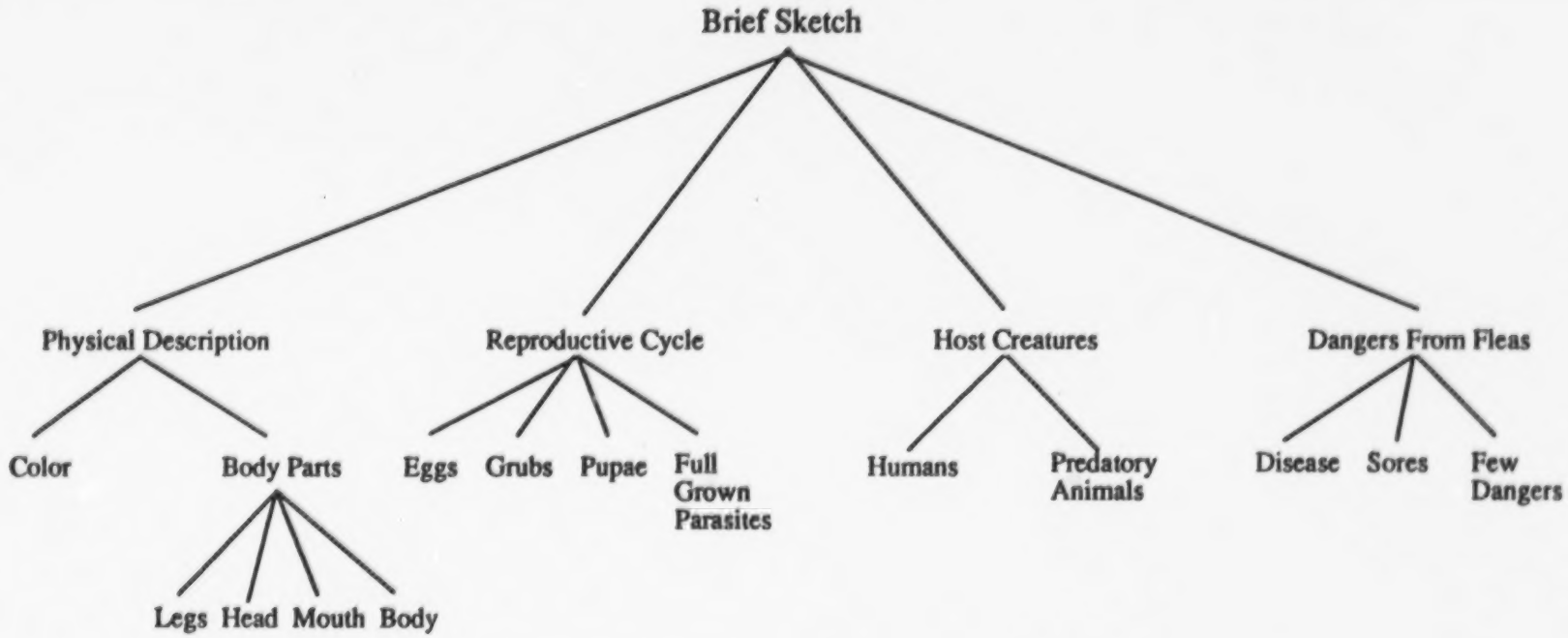
Please judge your ability in Spanish and English on a scale of 1 to 5 by checking the right box.
5 - Very good 4 - Good 3 - Average 2 - Poor 1 - Very poor

	Spanish					English				
	Very Good				Very Poor	Very Good				Very Poor
	5	4	3	2	1	5	4	3	2	1
Reading										
Understanding spoken language										
Speaking										
Writing										
Translating										

APPENDIX C
Text Analyses of Expository Passages
Text Analysis of the Octopus



Text Analysis of the Flea



APPENDIX D

Student Interview Protocol

a. What is reading?
b. Why do people read?
c. What does a person have to learn to be a good reader?
d. What is different about a person who is a good reader from someone who is not?

1. What is different about the reading of a person who has learned English as a second language compared to someone whose first language is English?
2. Could knowing both Spanish and English help someone to be a better reader or would it cause problems? Why?
3. Does being able to read in English help when you read Spanish? How?
4. Does being able to read in Spanish help when you read English? How?
5. Have you ever learned how to do something to better understand your English reading that you later used when reading Spanish? What?
6. Have you ever learned how to do something to better understand your Spanish reading that you later used when reading English? What?
7. Do you ever translate from one of your languages to the other when reading English or Spanish? Describe it to me.
8. How is reading Spanish different from reading English? Vice versa?
9. What does a person need to know to be a good English reader?
10. What does a person need to know to be a good Spanish reader? Is there any difference?
11. How did you become a good reader? In Spanish? In English?

APPENDIX E

Definitions and Examples of Reading Strategies Used by Bilingual Readers

Text-initiated Strategies

1. *Using text structure*: This strategy involved any overt recognition of structural elements within either the narrative or expository texts. For narrative text this usually took the form of commenting on different elements of story grammar, but it also included discussion of genre as well. Using text structure as a strategy also included a recognition that expository text can be organized (or disorganized) in different ways. For example, authors of informational text for children (and adults as well) often simply throw a great deal of facts together without an explicit underlying framework. This arrangement has been called "collection of descriptions" (Meyer, Brandt, & Bluth, 1980). Other types of informational text format have been identified as cause-effect (a subcategory of cause-effect is the problem-solution structure), compare-contrast, and sequence of events. Recognition and interaction with didactic questions within the text and comments on the writing style or comprehensibility of a passage were also coded as instances of this strategy.

An example of text structure usage taken from the protocol of one of the students follows:

> Hmm, se empezó, se empezó diciendo que todas las estrellas tienen estados especiales, después dice así, cortamente lo que pasa, ¿verdad? Después empieza a, después empieza a, como hacer una lista de que pasa primero, después de eso y luego. (Hmm, it begins, it begins saying that all of the stars have special stages, then it says like this, briefly what happens, right? Then it begins to, it begins to like make a list of what happens first, then what happens after that and so on.)

2. *Focusing on vocabulary*: This strategy involved focusing attention on unknown vocabulary items. The main thrust of this strategy was to identify problematic items; resolution of the difficulty was categorized as some other strategy--often accessing cognates or using context. Use of this strategy usually involved overlap with at least one other category, often that of monitoring. The students would indicate that such and such was a word they did not understand. An example follows:

> No sé que es la palabra palidece. Será que brilla o algo, no sé palidece, o sea o quizás, no sé, . . . (I don't know what the word *palidece* [dims] is. It might be shines or something, I don't know palidece, or is it, or maybe, I don't know . . . .)

3. *Summarizing*: For this strategy the students reduced the text by deleting material deemed unnecessary. Occasionally they also emphasized the importance of superordinate features within the text:

> OK, they're talking about an animal that lives in the water, it has a, it tells what the animal is like, it has eight arms, a soft body, and I would narrow it down to a marine animal, soft body, eight arms.

a. **Restating the text**: Students often vocalized parts of the text as they thought aloud. This strategy appeared to facilitate comprehension by allowing them time to process information. The textual information read by the student is presented first and is then followed by the student's response:

> They'll be dangerous when grown but will be confined to the preserve. The visitor stopped before the last of the tanks.
> "Just one?" he said. "What is it?"
>
> And then they, they're talking about they'll be dangerous when they grow up and then the visitor stops by the tanks and they said just one, what is it?

b. **Paraphrasing**: Although paraphrasing is similar to restating, it differs in that students transformed the text by adding, deleting, and/or rearranging information. In the example below, the text segment that was paraphrased is presented first, followed by the paraphrase:

> Rows of round muscles on the underside of each arm act as suction cups. These suckers can fasten tightly to any object, and may hold on even if the arm is cut off.
>
> It says that now an octopus, an octopus has muscles under its arm that are used as suction cups so it could grab prey and just like suck it in, and then bring it up to his mouth or whatever.

4. *Using context*: The use of context as a strategy usually involved an attempt to determine the meaning of a word or a difficult portion of the text by searching for nearby relevant information:

> Let's see, *wanton*[ly]. . . . Probably they were killed because people didn't know they were killing them, they just didn't know they were gonna exterminate them so probably because the next sentence it says that, I'm trying as it were. . . . I'm trying as it were to make, Oh! OK, so he wants to do this because people, he thinks people were like really mean and stupid and everything, now I know.

5. *Rereading*: The strategy of rereading occurred whenever a student returned to a portion of the text that he or she had previously dealt with for the purpose of further processing:

> Um, OK, um, OK, I'm reading back again.

6. *Decoding*: This strategy occurred only very rarely and involved an attempt by the subject to consciously attend to the graphic information found within a word:

> [I]t squeezes the water out of a funnel shaped opening under its head which is a *sim phon*, yeah, a *simphon* [siphon]. I guess I'm pronouncing that right.

Reader-initiated and Text-initiated Strategies

1. *Inferencing*: Goodman (1984) describes inferencing as educated guessing. Anderson and Pearson (1984) view inferencing as a major component within a schema theoretical framework. They see inferencing as the mechanism that allows one either to supply missing information, usually from prior knowledge (script-implicit), or to establish intertextual connections, that are not explicitly found or stated within a text (text-implicit). Inferencing then, can be of two types, text-implicit or script-implicit (see Pearson & Johnson 1978), both are categorized here as inferencing. Many of the inferences observed in this study included the words, "I guess, probably, maybe, or I think." An example follows:

> And now they have these, tiger cubs. I don't know how they get them there, because when they get bigger they'll be really protective of their area and they'll probably have to release them in a real open area because it would love to roam around.

2. *Questioning*: The strategy of questioning involved self interrogation. Often the use of questioning meant that the student had recognized and acknowledged the presence of an obstacle to comprehension. Questioning and monitoring were closely associated. The question, in effect, was the identification or set up of the problem at hand. An example follows:

> That's weird, why would a man need to take care of, I mean why would someone like a man need to be taken care of by someone like a biologist?

3. *Predicting*: Predicting involved active hypothesizing concerning events or information that the student expected to find later within the text. A sample follows:

> Porque si es frio y necesita un abrigo, va a tener que hacer algo para hacer uno, entonces como él es listo tal vez vaya a cazar algo o algo así. (Because if it is cold and he needs a coat, he's going to have to do something to make one, so then because he's smart, maybe he's going to hunt something or something like that.)

4. *Confirming/disconfirming*: Confirming/disconfirming involved an acknowledgement on the part of the student that something previously predicted either had or had not been corroborated by the text. Students also used this strategy after questioning when they found answers or failed to do so:

> Because it says that they spin cocoons and butterflies spin cocoons and then they turn into something else so . . . . Caterpillars spin cocoons and then they turn into butterflies so, because the fleas are cater, like kind of worms they must turn into fleas. Oh, OK, oh yeah, it says right here, see this . . .

Reader-initiated Strategies

1. *Invoking prior knowledge*: The strategy of invoking prior knowledge involved accessing previously learned information for the purpose of comprehending text. For the most part, this meant schema activation of relevant knowledge structures. An example follows:

> It's true, porque 100 times the length of its own body, 100 times, el hombre todavía no ha hecho eso, un hombre todavía no ha brincado 100 times its length. Entonces este brincar eso, pues, tiene unas piernas poderosas, lo cual es cierto acá. (It's true, because 100 times the length of its own body, 100 times. Mankind hasn't been able to do that, a man couldn't jump 100 times its length. So then, to jump that, well, it must have powerful legs, that much is certain here.)

2. *Monitoring*: This strategy included any recognition that comprehension had not occurred or had failed. On occasion, the students also confirmed that their understanding was in fact correct. Verbalization of this strategy often took the form of the subject simply stating that he or she did not understand something. An example follows:

> Estoy pensando que debo de ir a buscar a ver si, um, de, sé que es una estrella pero voy a buscar una palabra acá que no sé que es. (I'm thinking that I should go and look to see if, I know what a star is but I'm going to look for a word here that I don't know.)

3. *Visualizing*: The use of this strategy was marked by an attempt on the part of the student to visualize (i.e., create an image of) something suggested by the text:

> OK, it says here there are fifty kinds of octopuses, well I get this picture in my head of like the sea animal that's going up and down and then I think of different octopuses like different sizes, shapes, colors.

4. *Evaluating*: The strategy of evaluating the text usually took the form of commenting on the worth or importance of the text. At times, students would also judge the merit of the author's ability to communicate:

> OK, they, oh, let's see, I just like the way they kind of, uh, compared the animals to something like the rhinoceros. It says it trotted like a dainty battleship. I can see why because it does look like a battleship with all that stuff on it.

5. *Noticing novelty*: Use of this strategy was usually accompanied by an admission that the text contained information that was in some way new. The information was different enough from previously learned material that the student paid special attention to it:

> Cuz I don't, I have never heard of anything that has, I've heard of things that have bristles but I never heard of things that keep it from slipping backwards. And this one's really weird cuz it can't slip back.

6. *Demonstrating awareness*: This metacognitive strategy involved verbalization of knowledge that students possessed of themselves as readers, of the task of reading or of the usefulness of different reading strategies. The following example contains elements of self-knowledge and strategic knowledge:

> Now sometimes I get mixed up when I'm reading. I start here and I kind of learn something, so I go back over it. . . . See it says there's fifty kinds of octopuses and they're mostly as big as your fist. I always thought they would be larger. I imagine octopuses as really humungous things, so I go over that so I can remember that. Then I go over how much they measure. OK.

Bilingual Strategies

7. *Searching for cognates*: This was the strategy of consciously drawing upon the lexicon in one language in order to comprehend, or more fully comprehend, a text that contains cognate or related vocabulary. This strategy required that its user possess at least tacit knowledge of the relationship that exists between the Spanish and English languages. An example of this follows:

> Like from the Greek, *octopus*, eight, eight, like in Spanish *ocho pies*, octopus. *Pus* might be pies and *octo* eight.

8. *Code-switching*: Code-switching refers to the act of switching from one language to another during the discussion of text. Code-switching was not a conscious activity employed for the purpose of comprehension. Instead, it probably occurred because both the students and the investigator were bilingual. Nevertheless, it was initially identified and counted as though it were a strategy:

> OK, it says their budget is limited to re-create all known extinct species, extinct no quiere decir like when they're almost gone. . . ?

9. *Translating*: Translating within the context of reading refers to the strategy of paraphrasing parts of a text via the bilingual's other language for the purpose of clarification:

> Y luego acá dice se desaparece y se forma un agujero negro y esas dos palabras se oyen como black hole, como sig, porque agujero it's like a hole and negro is black, and it has to be black hole. (And then it says that it disappears and forms a black hole [agujero negro] and those two words sound like black hole, and then what follows, because *agujero* it's like a hole and *negro* is black, and it has to be *black hole*.)

**Transferring*: This strategy was identified after initial analysis of the data was completed. In a sense, all cases of transferring were also instances of invoking prior knowledge, in that the reader consciously accessed information cross-linguistically:

> Las novas me recuerdan con los libros que leo en inglés, las estrellas. (The novas remind me of the books that I read in English, the stars.)

APPENDIX F

Responses Made by Proficient Latina/o Readers to English Narrative Text Excerpt

Proficient Latina/o Readers	**Portion of Text Read by Participant** The biologist was showing the distinguished visitor through the zoo and laboratory. "Our budget," he said, "is too limited to re-create all known extinct species. So we bring to life only the higher animals, the beautiful ones that were wantonly exterminated.
	Participant Response to Text
Marcos	OK, the biologist is trying to create animals that the men has already killed, and that's a very interesting idea because he's gonna make life again
Pamela	OK, it's about a biologist, he, a biologist was showing a visitor through a zoo laboratory. OK, and distinguished, that word, I kinda know what it is, distinguished, like, umm, the friend maybe, oh God, I know what, ¿Cómo se dice en español, distinguo o algo así? Distinguido. Distinguished, distinguido como diferente. OK, I think quiere decir diferente. OK, it says that their budget is limited to re-create all known extinct species, extinct species, extinct no quiere decir like when they're almost gone, like right now the African Elephant I think, they're um, like, they're aren't any more, there is not food for them so they're like dying I think? Species, especies, en español se dice especies, ¿verdad que sí? Especies, bueno para mi quiere decir especies, como animales o especies, diferentes clases de cosas, I think . . . so we bring to life . . . exterminated, exterminated. Um, exterm, the higher animales the beautiful ones that were wantonly exterminated. Maybe killed?
Betty	OK, now here it says that there was a biologist and there was a visitor. Maybe the visitor asked the biologist where something was so maybe the biologist was showing him around to show him where the place was. Yeah, it starts right off, our budget he said is too limited to. . . . Maybe their budget, they don't have enough money. So they can't put any, I don't understand that. It says is too limited to re-create all known extinct species. To re-create all known, I understand what extinct species mean. Oh maybe they're trying to bring back extinct species because here it says so they bring life only to higher animals. Maybe the beautiful ones, the ugly ones they don't want them to be, to like awaken them again, only the beautiful ones.
Kathy	OK, well one character is a biologist, and there's a visitor and he, the biologist, is showing the visitor through the zoo and a laboratory. OK, and uh, uh, the biologist, well he probably does experiments on, well, on species, trying, he experiments on animals and now to try find out information and stuff. I was gonna say extinct but extinct means that they're like, they're like dying. Like there's very few left. [And] I don't think he would kill extinct species if they're, if they're dying already. He would be like killing the ones that are left, see, so.I think it would be wrong if he did that. Um, well, there's a word I don't know here, it says the beautiful ones that were wan, wan tone ly exterminated. And exterminated means um, killing, like exterminating mice or roaches. Um, [I guess I'll] read the rest of the sentence and try to figure out what it's trying to say, um, well they're talking about these higher animals, the beautiful ones and I guess they exterminated some animal.

Samuel	Um, a biologist, yeah, a biologist. To revive somebody maybe, I mean, I mean, no, you said it was science fiction so it can't be about real lives of somebody, I mean this guy can't fight real life of somebody. Alright, I think this is wrong because here it says our budget, he said, is too limited to re-create all known extinct species so we bring to life only the higher animals, the beautiful ones and the wantonly exterminated. Well he shouldn't bring animals alive at all, I think. Maybe the animals would change attitude or something, they will be like wild, more wild than before so, I don't know. No. I think this story takes place long in the future or something.
Lisa	I'm thinking that this is gonna be like a story where they might take animals back to the laboratory and probably do some kinds of experiments on them to figure out like, if they are extinct animals or if they are like really known there. Known there, like if they're a lot of them there they're like the whole population there and not like a small amount. I'm thinking that they're probably gonna take some of the animals like the gorilla and probably the giraffe and the sea otter too. Take them to the laboratory and make probably experiments on them or else they'll just take them to the zoo.
Alberto	The king of the beasts, that makes me think that it will deal with lions cuz they're the king of the jungle. They're gonna, my prediction for this story is they're gonna try to make the extinct animals, for the example the dinosaurs, to come back to life. They only want animals that are higher, like more intelligent and beautiful ones. These people use some weird language.
Gilda	I have to go back to another sentence, to the sentence cuz I kind of lost my place. Re-create, OK, that's to create again. Oh, they want to create species that were lost, ok. want, wan tan ly. What is that? Well, I don't know the meaning of a word. They want to bring back the superior animals, the ones that were really pretty but they're talking about a kind of way they were killed. But who knows what kind of way it is. Let's see, wanton. . . . Probably they were killed because people didn't know they were killing them, they just didn't know they were gonna exterminate them so probably because the next sentence it says that, I'm trying as it were. . . . I'm trying as it were to make, Oh! OK, so he wants to do this because people, he thinks people were like really mean and stupid and everything, now I know.

APPENDIX F (Cont.)

Responses Made by Less-Proficient Latina/o Readers to English Narrative Text Excerpt

Less-Proficient Latina/o Readers	**Portion of Text Read by Participants** The biologist was showing the distinguished visitor through the zoo and laboratory. "Our budget," he said, "is too limited to re-create all known extinct species. So we bring to life only the higher animals, the beautiful ones that were wantonly exterminated.
	Participant Response to Text
Catalina	OK, well when I read the beginning, it the title, it sounded like it was a king and, there was a king and uh some beasts and um, the biologist was showing the visitor through the zoo and laboratory, I think to see the animals. Um, I don't understand this, our budget, what is budget? Um, uh, like your money I think. Cuz I think I heard, heard of it somewhere else, something about money in the budget. Um, the sentence, "it's too limited to re-create all known exhibit species," I think that maybe they're gonna do maybe an experiment of the animals.
Michael	It's talking about a biologist who's showing a visitor around the zoo, and like, like you know when, how the biologist is going through the zoo. I'm thinking of like you say this cartoon, Dina I think it was called, Dina the last dinosaur or something like that, where they put him in a cage, like he was the only animal there, so I'm thinking about that cartoon. They're trying to re-create all known extinct species of animals like,sort of like, like you know, like they have, like um, like some eagles are about to be extinct in one place and things like that, they have them separate, trying to make em grow more and more.
Celina	Well what kind of, what he was showing him. Well, was he showing the biologist. Who was he showing it to and what was he showing him. What kind of spaces he was gonna . . . . Well, is this [word] spaces? It doesn't look like if its spaces. I remember how you spell it and it's [not] the same way. I'm reading it. Is this [word] want only?

APPENDIX F (Cont.)

Responses Made by Proficient Anglo Readers to English Narrative Text Excerpt

Proficient Anglo Readers	**Portion of Text Read by Participants** The biologist was showing the distinguished visitor through the zoo and laboratory. "Our budget," he said, "is too limited to re-create all known extinct species. So we bring to life only the higher animals, the beautiful ones that were wantonly exterminated.
	Participant Response to Text
Michelle	Well it says the biologist was showing a distinguished visitor through a zoo and a laboratory. And basically I'm picturing like going through a zoo like the monkeys and that and then like, and then like opening a door and going into a room where there's like potions and everything. Then he talks about his budget, um, he says it's limited so like they really can't create, they really can't re-create extinct species. I'm thinking of like dinosaur bones and this guy applying like a potion or something over em and they're coming alive in the muse, in the zoo. Then he, then he says um, and then he says we only bring higher animals to life and beautiful ones.
Tricia	Um a biologist was um showing this person the zoo and the laboratory and he was telling him about their budget. And um, like it's too limited, it's, they can't do much um, to re-create all the extinct animals. Um, like they can't rebuild dinosaurs and stuff, cuz they don't have enough money like to go out and try to find on digging sites and stuff so that they can't try to find em and bring em back to actually build em and glue em together. So they bring um, to life only the higher animals. Ones that maybe aren't extinct yet that they have found that died.
Bruce	Two people are at a zoo, near a laboratory and one guy is showing em around. He's talking about the expenses. It's confusing, cuz they're walking through a zoo and they're talking about expenses and they're talking about re-creating extinct species. To like bring things that died a long time ago back to life. They're kind of like mad scientists trying to do something and they're only trying to bring back animals, not humans or anything. They only want the beautiful ones back, not the ugly ones.

APPENDIX G

Prior-Knowledge Scores for English and Spanish Passages

	King of the Beasts (Narr.)	Flea (Expos.)	Octopus (Expos.)	Como Estos Hay Pocos (Narr.)	Un Abrigo Barato (Narr.)	La Energía Solar (Expos.)	Estrellas Especiales (Expos.)
Proficient Latina/o Readers							
Marcos	5	11	7	2	1	8	7
Pamela	2	5	2	3	2	3	1
Betty	3	6	3	2	1	4	2
Kathy	5	6	5	3	2	3	6
Samuel	5	5	3	2	4	7	5
Lisa	5	7	4	3	2	5	4
Alberto	6	5	3	4	4	8	3
Gilda	10	12	10	1	1	7	7
M	5.13	7.13	4.63	2.50	2.13	5.63	4.38
Less-Proficient Latina/o Readers							
Celina	0	1	2	3	0	0	2
Catalina	4	5	2	1	1	2	1
Michael	6	7	3	2	3	3	4
M	3.33	4.33	2.33	2.00	1.33	1.67	2.33
Proficient Anglo Readers							
Michelle	5	6	6				
Tricia	7	5	3				
Bruce	8	5	2				
M	6.67	5.33	3.67				

Note. There was a combined total of 15 possible points for the two Spanish narrative passages. All other passages had a 14-point possible total.

APPENDIX H

English Passage Recall Scores with Language of Retelling

	King of the Beasts (Narr.)	Flea (Unprompted Expos.)	Octopus (Prompted Expos.)	Mean Recall Score by Student
Proficient Latina/o Readers				
Marcos	4 Eng.	5 Eng.	5 Eng.	4.66
Betty	5 Eng.	5 Eng.	5 Eng.	5.00
Lisa	4 Eng.	5 Eng.	5 Eng.	4.66
Gilda	6 Eng.	6 Eng.	5 Eng.	5.66
Kathy	3 Eng.	4 Eng.	5 Eng.	4.00
Alberto	6 Eng.	5 Eng.	6 Eng.	5.66
Pamela	4 Eng.	4 Eng.	5 Eng.	4.33
Samuel	6 Sp-CS	6 Sp-CS	6 Sp-CS	6.00
M	4.75	5.00	5.25	
Less-Proficient Readers				
Celina	1 Eng.	1 Eng.	2 Eng.	1.33
Catalina	2 Eng.	3 Eng.	2 Eng.	2.33
Michael	2 Eng.	2 Eng.-CS	5 Eng.	3.00
M	1.67	2.00	3.00	
Proficient Anglo Readers				
Bruce	2	4	3	3
Tricia	3	4	4	3.66
Michelle	5	4	5	4.33
M	3	4	4	

Note. Recall scores ranged from 1-6. Eng. = English, Sp. = Spanish, CS = code-switching.

APPENDIX H (Cont.)

Spanish Passage Recall Scores with Language of Retelling

	Un Abrigo Barato	Comos Estos Hay Pocos	Energía Solar	Estrellas Especiales	Mean Retell Score by Subject
Proficient Latina/o Students					
Betty	4 Eng.	3 Eng.	1 Eng.	4 Eng.	3.00
Marcos	6 Sp.	6 Sp.	6 Sp.	5 Sp.	6.25
Lisa	3 Sp.	3 Sp.-CS	3 Sp.-CS	3 Sp.-CS	3.00
Gilda	6 Sp.	6 Sp.	3 Eng.-CS	4 Eng.-CS	4.75
Kathy	3 Eng.	4 Sp.	3 Eng.	3 Eng.	3.25
Alberto	6 Sp.	6 Sp.	6 Sp.	6 Sp.-CS	6.00
Pamela	6 Sp.	6 Sp.	4 Sp.	4 Sp.	5.00
Samuel	6 Sp.	6 Sp.	4 Sp.	5 Sp.	5.25
M	4.86	4.86	3.71	4.14	
Less-Proficient Latina/o Readers					
Celina	3 Eng.	2 Eng.	0	1 Eng.	1.50
Catalina	3 Sp.	3 Sp.	2 Sp.	2 Sp.	2.50
Michael	5 Sp.	5 Sp.	2 Sp.	3 Sp.	3.75
M	3.67	3.33	1.33	2.00	

Note. Recall scores ranged from 1-6. Eng. = English, Sp. = Spanish, CS = code-switching.